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EXAMINER	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/651,498
Filing Date: August 30, 2000
Appellant(s): DEVLIN ET AL.09651498

John D. Reed
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 8/11/2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 36, 39-42 and 44-46 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

US 5578127	Yoshio Kimura	11-1996
US 6107608	Hayes	8-2000

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2 Claims 36 and 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugimoto et al (US 5762709) in view of Yoshio Kimura (US 5578127).

Sugimoto et al disclose a spin coating apparatus disclosing a heat regulating element (Fig 2-50), a cylindrical heat regulation void to accommodate an object (Fig 2 1a) and a circumferential gas flow path (Fig 2-30), a temperature sensor in gas flow path (Fig 3 -58a), rotary drive motor, rotary drive spindle (Fig 2-1b, 1) exhaust gas profile (Fig 5 F) and a wafer support (Fig 2 W).

Sugimoto et al do not disclose the regulating frame with fluid inlet and outlet and an additional heat-regulating flange attached to the drive motor.

Yoshio Kimura discloses a heat regulating flange (Fig 2-31b), a rotary drive motor (31) attached to a rotary spindle extending through flange body (31a), liquid source coupled to the fluid conduit (33), a controller coupled to the liquid source (fig 2-36 and Col 5 line 17-19 and

line 42- 50), programmed (Col 5 line 42-50) to be responsive to a signal from a temperature sensor proximate the rotary spindle passage and fluid conduit (Arrow connected to 36) so as to control temperature of flange by controlling the temperature of the fluid (Col 4 line 47-50) and a rotatable wafer support (28).

Therefore it would have been obvious for one of ordinary skill in the art at the time invention was made to replace external air flow temperature adjustment unit of Sugimoto by a water jacket around the gas flow enclosure (heat regulation void) (30) like the one Yoshio Kimura discloses around the rotary spindle in order to have more efficient (being closer to support) and less expensive temperature control system and additionally to have a heat regulation flange (as disclosed in Fig 2) to prevent heat conduction from the motor to the wafer.

3 Claims 39-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugimoto et al (US 5762709) in view of Yoshio Kimura (US 5578127) as applied to claim 36 and further in view of Hayes (US 6107608).

Sugimoto et al or Yoshio Kimura discloses temperature control (Fig 2) but do not expressly disclose the location of the temperature sensor.

Hayes discloses a similar heat-regulating flange where the temperature sensor is embedded in it (Fig 7-38 and Col 5 line 47-48).

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to embed the temperature sensor so as to have a stable temperature sensing and close feed back control of temperature for the spin chuck.

(11) Response to Argument

Applicant argues that `709 (Sugimoto et al) patent does not disclose an open frame work heat regulating void but rather closed air conduit which alters the exhaust profile and argues that there are performance advantages associated with the open frame work.

The meaning of "open frame work" in this context must be seen in the light of the specification at page 11 lines 20-27. Essentially, the so-called open frame work is made of gaps around the spindle or an inlet (Fig 2-53 or Fig 4-53) made at the side. The exhaust gas profile is shown at (Fig 2-59). This interpretation was suggested by the applicant in response to Examiners rejection under 35 USC § 112 in the office action dated 2/10/2004.

If the applicant intends to imply that there is no adequate flow of air in Sugimoto et al, it is incorrect (Col 2 lines 60-65).

Applicant further argues that neither `709 (Sugimoto et al) patent nor `127 (Kimura) patent disclose heat exchange arrangement between the flowing air and a heat regulating fluid.

Applying the teaching of Kimura to Sugimoto et al requires that the fluid conduit be placed around cylindrical heat regulation void. This would allow interaction of temperature controlling fluid with air as well as spindle inside the void.

The temperature control of any gas is essentially done by an interaction to fluid in a conduit such as in air conditioning. In fact the temperature control of exhaust gas in Sugimoto is also obviously done in this way, although not at the spindle. Applying the teaching of Kimura to bring the heat exchange closer to wafer would be simpler.

Applicant argues that claim 44 recites a heat regulating flange being disposed between the motor and wafer support and the heat regulating element disposed between heat regulating flange and the wafer support.

Since the heat regulating flange has to be near motor as per the teaching in Kimura and the heat regulating element near wafer support as per the teaching in Sugimoto, Sugimoto as modified by Kimura discloses the disposition as claimed.

Applicant argues that the temperature sensor for temperature responsive heat regulating flange-chuck in Hayes is not the same as claimed and is not disposed in a similar fashion.

Hays discloses temperature control in a spin chuck with an embedded sensor, which is very relevant to the situation of temperature control of heat regulating flange of the claim.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

RK
September 2, 2004

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